ESSAY

GOODS MOVEMENT IN SOUTHERN CALIFORNIA: CHALLENGE, OPPORTUNITY, SOLUTION

Summarized by John Husing, Ph.D.

Southern California faces an extraordinary economic opportunity and a frustrating policy dilemma. The rise of Asian trade through Los Angeles and Long Beach harbors to the nation has given the area its first true competitive advantage for creating good-paying blue collar jobs since the rise of aerospace after World War II. A 1,000,000-job economic strategy aimed at providing entry into the middle class for some of the 44% of local adults with no college experience is now possible. But with San Pedro Bay ports handling 43% of the containers entering the U.S., the region's communities find themselves drowning in a sea of trucks and trains and choking on their exhaust. Can we identify and implement the infrastructure projects, environmental policies and funding mechanisms to harness this opportunity or must California lose a chance to raise the prosperity of thousands of its families and improve public health? That is the dilemma facing today's generation of analysts, activists and leaders.

The Opportunity

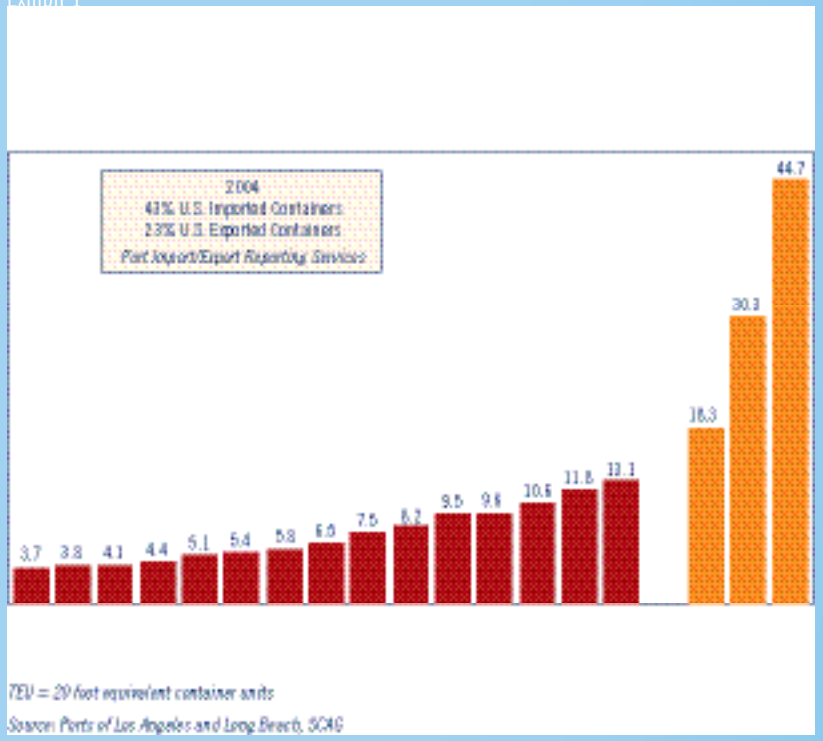
Southern California's new competitive advantage starts with the fact that countless manufacturers now find that Asia's labor costs are a fraction of those in the U.S. Price competition among retailers like Wal-Mart, Costco and Home Depot has forced them to increasingly rely on Asian producers to stock their shelves. In Southern California, this has caused soaring container volume at Los Angeles and Long Beach harbors. In 2000, 9.5 million total TEU's *(20-foot equivalent container units)* were processed *(imports, exports, empties)*. In 2004, it was 13.1 million, up 37.9% (Exhibit 1). By 2030, the ports forecast that volume could reach 44.7 million, triple today's figure.

Meanwhile, the 2004 total volume figure included 6.8 million TEU's of the 15.8 million imported containers entering the U.S., a 43.0% share. It also included 1.8 million exported containers or 22.9% of the nation's total. On the import side, several relatively obvious factors have created competitive advantages for retailers to move goods through Southern California *(Imperial, Kern, Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura counties):*

- Its ports are on the West Coast nearer to Asia.
- Its January 2005 population of 21.9 million constitutes a huge internal market.

- Its huge port operations handle triple the volume of Oakland-SF, Seattle-Tacoma, Portland & Vancouver combined *(5.1 million TEU's)*. A Mexican port is still theoretical.
- As giant post-Panamax ships *(8,200-TEU ships & up)* come on-line, Oakland cannot accommodate them as San Francisco Bay is too shallow.
- The landside rail and freeway connections to U.S. markets from Seattle-Tacoma and Vancouver are limited compared to Southern California as is their intermodal capability and access to goods transloading, consolidation and storage facilities.
- Ocean carriers like to drop cargo going to Southern California's huge internal market and off-load containers headed throughout the U.S. before they visit other West Coast ports.

Exhibit 1



Less obvious is why large high value retailers with multiple U.S. markets prefer to ship to Southern California's ports and use local warehouses to consolidate and transload goods on to relatively expensive trucks or trains for nationwide delivery. Their option: Use inexpensive ships to take their goods to multiple U.S. ports nearer those hubs. While the alternative would save on transportation costs, the Leachman *Port & Modal Elasticity Study* commissioned by SCAG[1] showed that retailers save 18% to 20% by operating from the Southland for 3 reasons:

- For national retailers, the wider the gap between when sales forecasts are made at their hubs and the arrival of goods, the *larger* the inventories they must order to cover forecasting errors. If they ship directly to each hub via multiple ports, inventory decisions must be made while the goods are in Asia, *4-7 weeks* before delivery. If they ship to Southern California and manage their inventories from here, those decisions are made *1-2 weeks* before delivery, cutting the risk of error and reducing the size and cost of inventories.
- If a national retailer sends goods directly to multiple hubs from Asia and a container misses a ship, one destination hub will get no goods while the retailer's other hubs will be fully stocked. By shipping to

[1] *Port & Modal Elasticity Study*, Dr. Rob Leachman, Leachman & Associates LLC, September 2005.

Southern California and using local consolidation facilities, the firm can elect to reduce each hub's supplies by the amount of any missing cargo. This spreads the risk and reduces the "safety" inventory that it must buy.

• High value retailers are the most likely to ship to Southern California and create jobs by managing their inventories via local transloading, warehousing and consolidation because inventory costs are magnified for expensive goods. It thus costs more for these retailers to buy extra inventory to both guard against sales forecasting errors if they ship directly from Asia and guard against supply chain disruptions.

Speed and reliability are crucial to Southern California's competitive edge. This was nearly lost in 2004 when 93 ships were tied up in San Pedro Bay because the ports could not unload them or efficiently move freight out their gates. It happened in 1996, when Union Pacific's purchase of Southern Pacific slowed freight movements, and again in 2005 when heavy rains and landslides disrupted rail traffic. Freeway congestion is an issue, slowing interstate trucks that go from the ports through Cajon (I-15) and San Gorgonio (I-10) passes. Meanwhile, growing neighborhood opposition to port, rail and freeway expansion due to diesel fumes, noise and lack of grade separations threatens to prevent needed infrastructure expansion to combat these delays. As a result, some retailers have built facilities elsewhere to guard against this region's emerging difficulties.

The Potential Benefits

If Southern California can maintain its competitive advantage for handling the growing volume of goods movement and solve the issues of congestion, diesel emissions and community impacts, significant benefits will flow to its labor force as well as the firms involved in goods movement and the people living near transportation facilities.

Labor Force Benefits

The SCAG funded Husing labor force study[2] showed that in 2003 some 44.6% of Southern California's adults had stopped their formal educations with a high school diploma or less *(Exhibit 2)*. It was half or nearly half the population of Kern, San Bernardino, Riverside and Los Angeles counties.[3] It was over one-third of the population in San Diego, Orange and Ventura counties. Historically, manufacturing allowed this population to achieve upward economic mobility via high entry-level pay and on-the-job learning. However, the sector lost 324,800 jobs in California from 2000-2004 *(17.5%)* mostly due to rising Asian competition.

Today, the logistics industry offers the possibility of replacing manufacturing as a source of rising incomes for workers with these educational levels. These sectors are involved in receiving, processing, storing and moving goods. In 2003, this included 38,706 firms with 548,278 workers *(Exhibit 3)*. Importantly, the median and average pay levels in logistics are a little over $2,000 above manufacturing and $4,000 above construction, the other major blue collar sectors.

Exhibit 2

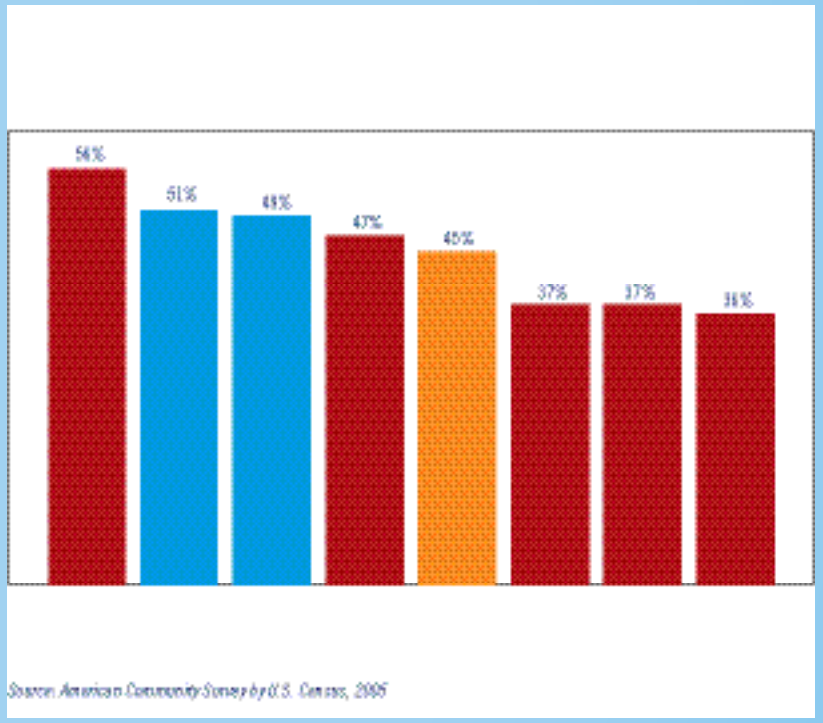
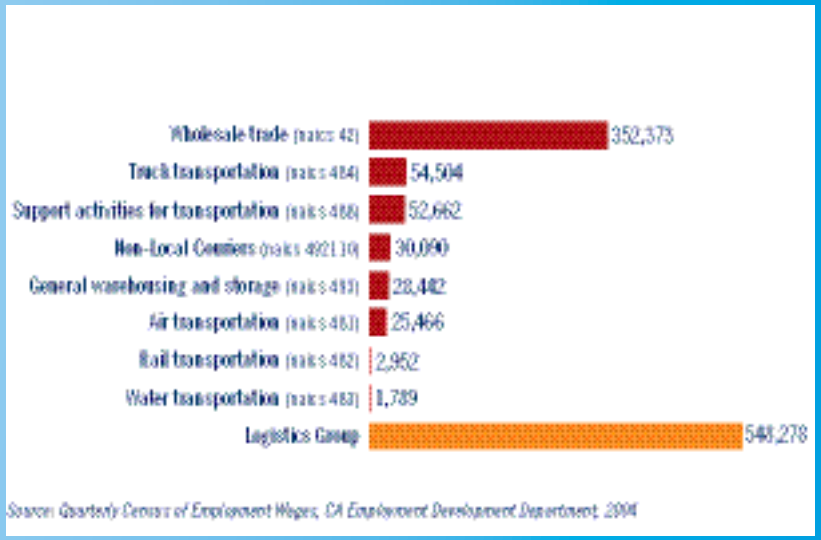


Exhibit 3



[2]*Logistics and Distribution: An Answer to Upward Social Mobility*, Dr. John Husing, Economics & Politics, Inc. June 2004 *http://www.scag.ca.gov/goodsmove/pdf/HusingLogisticsReport.pdf*
[3]Imperial County data unavailable for 2003. The figure was 62.9% in 2000.

Research by SCAG's staff found that by building the infrastructure to accommodate the growth of trade and cleaning up its worst environmental side-effects, 1,381,000 Southern California jobs can be created. Of these, 325,000 would be in logistics as the sector follows its normal growth path, plus another 95,000 due to the transportation system's added efficiency. Building and maintaining the new infrastructure would add 277,000 construction jobs, while phase 1 of the Maglev system from LAX to Ontario International Airport would add another 91,000. Expanded transportation efficiency would cause the general economy to expand, adding 83,000 jobs. The multiplier impacts of all this investment spending would provide the other 510,000 *(Exhibit 4)*.

Exhibit 4

Activity	Job Creation
Logistics Natural Growth	325,000
Logistics: Additional Growth Due To System Efficiency	95,000
Rail Capacity, Grade Separation, Truckway	277,000
Rest of Economy Growth: System Efficiency	83,000
Maglev LAX-ONT	91,000
Multiplier Impacts	510,000
TOTAL	1,381,000

Transportation Sector Benefits

The infrastructure to allow the expansion of Southern California's logistics sector will *not* be built unless the region's goods movement companies find it will increase the speed and reliability of their operations in substantial and measurable ways. That is the message that emerged from extensive roundtable discussions between the shippers and the agencies concerned with improving the system.[4]

To calculate this, SCAG's staff created metrics to measure potential improvements via a *Speed & Reliability Study*. It assumed a conservative $73 per hour cost for moving cargo by freeway and modeled anticipated delays from congestion and accidents at various times of the day. The study found that if dedicated truckways and expanded railroad infrastructure were built, and tolls and fees later charged to use them, shipping would cost less than without such a system. These results are being presented to industry for peer review. One example, in moving containers to Ontario from the ports:

- Shippers would have a time-cost savings of $76 per load without allowing for unexpected congestion delays.
- Shippers would have a time-cost savings of $233 per load if they do allow for unexpected congestion delays.

Environmental Benefits

In California, it is axiomatic that major infrastructure projects will not be built unless the environmental community is satisfied that they will, at worst, do no harm, and at best, decrease health risks. For the logistics infrastructure needed to energize Southern California's blue collar job

[4]Roundtable meetings were convened by SCAG in February, May, and August 2005.

growth, the key will be the strategy's ability to seriously reduce NOx *(nitrogen oxides)* and fine particulate matter from diesel fumes at the ports and intermodal yards as well as along freeways and rail lines. Also, rail grade separations will be necessary so trains do not divide cities, slow emergency vehicles, tie up traffic and increase noise pollution.

One strategy is to speed up investment in Tier III lower diesel-emitting railroad engines and similar engines for trucks, to reduce port and intermodal railyard emissions. Also, the oldest and dirtiest trucks could be bought and retired, and newer trucks retrofitted. In harbor areas, several strategies could reduce emissions from ships burning low-grade bunker fuel. "Cold ironing" could be applied at the docks so ships are powered off the electrical grid not their diesel engines. Ships entering port areas could be required to move at slower speeds to burn less fuel. The U.S. Senate could ratify the MARPOL Annex VI *(marine pollution treaty)* and support formation of a North American Sulfur Emission Control Area requiring ships entering the ports to use lower-sulfur fuel.

To reduce freeway congestion and emissions, PierPASS has instituted its OffPeak program with an $80 container fee waived for trucks moving in evening and weekend hours. Some 30% are doing so, reducing the big rig impact on peak-time congestion and idling. To help this effort, an Inland Empire truck port is under discussion. At it, loads would be left at night and distributed the next day. Also being implemented is *computerized matching* of in and outbound container loads to stop empties from returning to the ports after an import delivery, only to return as empties to the same area for an export load. And, the Alameda Corridor Transportation Authority is studying the economics of using short haul rail for some of the 1.24 million containers going to the Inland Empire each year.[5] Local trucks will haul them to warehouses from an inland rail port. Meanwhile, given rail's key roles to any emissions solution, the Alameda Corridor East projects are essential to eliminate the many at-grade rail crossings from the Alameda Corridor's terminus to the deserts.

The Solution

Fortunately, a path to solving the issues described here is becoming evident.

Projects

It begins by detailing the projects needed if the transportation system is to have the efficiency and reliability that shippers need to continue expanding and creating local jobs. SCAG region stakeholders have helped develop an unprioritized *$26.2 billion* goods movement project list.[6] To develop further detail and priorities, the *Multi-County Goods Movement Action Plan* is underway. It is being funded by county transportation commissions, Caltrans and SCAG.

[5]Alameda Corridor Transportation Authority, *Consolidation Activity in Southern California Area,* BST Associates

Environmental

In addition, it is essential that the region set aside funds and develop the environmental strategy to accompany them. Cost estimates to mitigate the impacts of freight-related diesel usage on public health and the environment vary widely. No matter what, the region must come into attainment of health-based air quality standards and address other environmental impacts of goods movement. Investments in environmental mitigation strategies can and should be financed side by side with infrastructure investments.

Elasticity Study

As stated, the Leachman *Port & Modal Elasticity Study* showed that national retailers save 18%-20% on their inventory costs by shipping their high-value products to Southern California and using local warehouses to manage, consolidate and transload cargo before rail or truck delivery to various U.S. hubs. This process cuts weeks off the lag between hub level sales predictions and the arrival of the goods, lowering the inventories needed to cover forecasting errors. Centralized warehousing also reduces the inventory needed to cover the risk that some cargo deliveries will be interrupted along the supply chain.

Using data on the economics of shipping decisions provided by national retailers, the *Elasticity Study* also looked at the impact on container volumes at Southern California's ports if an expanded goods movement network was built and, *afterwards*, shippers amortized their investments through a schedule of fees and tolls to use the system and retire its construction debt. The conclusion was that under such an arrangement, the system's added speed and reliability would lure 12.5% more high-value cargo that creates jobs as it is handled by Southern California's logistics operations. It would also chase away low-value cargo that just passes through the region without creating jobs, freeing rail and freeway capacity for high-value shippers.

Return On Private Sector Investment

Combining the results of the *Speed & Reliability Study* to those of the *Elasticity Study* yields serious lessons for strategies to finance Southern California's logistics system. Earlier, it was indicated that the *Speed & Reliability Study* found significant cost savings to shippers of having access to a dedicated truckway. If a small portion of those[6]

[6] *Southern California Regional Strategy for Goods Movement: A Plan for Action,* February 2005, Table 2, SCAG, *http://www.scag.ca.gov/goodsmove/pdf/GoodsmovePaper0305.pdf.*

savings were paid as a toll to help retire the $16.5 billion debt from building the truckway, shippers would profit from the system. For example, towing a container via truckway from the ports to Ontario:

- Shippers would have a $76 time-cost saving with no allowance for unexpected delays. Using a truckway toll of 86¢ per mile, the trip cost would be $32. The truck tollway would cause bottom-line profits to increase by $44 per trip.
- Shippers would save $233 in time-cost saving when allowances for unexpected delays are included. At a truckway toll of 86¢ per mile, the trip cost would be $32. The truck tollway would cause bottom-line profits to increase $201 per trip.

The study found that the time-cost savings from expanding the region's rail system to be even more dramatic. Again, this research is being presented to the shipping industry for peer review.

Financial Feasibility

Southern California faces difficult infrastructure financing questions. Can it pay for the *$26.2 billion* in highway and rail improvements that will generate over 1 million logistics related jobs? Can it also finance the billions needed for environmental projects? After the system is finished, can it institute a fee schedule to repay the construction financing and stay within the limit where the *Elasticity Study* finds the maximum trade benefit?

In each case, the answer is YES. The funding strategies in Exhibit 5 row 5 use an 86¢ per mile truckway toll with a $160-$170 container fee. Together, they are generally below or about equal to the threshold from the *Elasticity Study* and raise the needed $36.2 billion.

Exhibit 5

Project	Capital Cost	Fee Structure	Fee Ranges and Assumptions
1 No Project	$0	None	None
2 Truckway Only	$16.5 Billion	Container Fees and Truckway Toll	$60 to $70 Container Fee 86¢ per Mile Truckway Toll *(Level debt @ 5%, 30-35 Years)*
3 Rail Improvements Only	$3.5 Billion	Container Fees	$15 to $20 Container Fee *(Low Fee: tax credit instrument)* *(High Fee: 5%, ascending debt; 20 Years)*
4 Total Highway and Rail Improvements Only	$26.2 Billion	Container Fees and Truckway Toll	$120 to $130 Container Fee 86¢ per Mile Truckway Toll *(Roads: level debt @ 5%, 30Yr, 35Yr, 40Yr)* *(Rail: tax credit and ascending debt for rail)*
5 Total Highway and Rail Improvements and $10 Billion Environmental Mitigation	$36.2 Billion	Container Fees and Truckway Toll	$160 to $170 Container Fee 86¢ per Mile Truckway Toll *(Highway/Environmental: Level debt @ 5%, 30Yr, 35Yr and 40Yr)* *(Rail: tax credit instrument and ascending debt)*

The Next Steps

Southern California has competitive advantages that will allow it to create over 1,000,000 in middle-class jobs related to the logistics sector if it undertakes the infrastructure and environmental projects necessary to allow those jobs to be created. The jobs are needed, given that 44.6% of the region's adults have no college experience. Shippers will find that their financial benefits from an expanded goods movement system's

increased speed and reliability will more than offset their costs to use it. The tolls and user fees needed to re-pay the strategy's $36.2 billion price tag will generally be below or at the $100 per TEU *(2005 prices)* that could hurt the region's trade. What remains? To undertake the measures to move this strategy forward:

- **Creation of a Southern California Institution to Execute Infrastructure Construction.** No existing institution, under its current authorities, can manage the building of the wide range of infrastructure and environmental projects needed to implement the logistics-based economic strategy region-wide. Such an institution must be able to prioritize projects, undertake bidding, establish budgets, raise and repay funds and manage construction in all counties. The creation of such a Southern California-based institution may require legislation.
- **Peer Review.** The research conducted on this issue needs to undergo peer review by the retailers, shipping companies and others with a financial stake in the system. If their analysts find that the system will serve their corporate interests, they will become the crucial link in convincing government entities to move forward with funding and implementation strategies. If they do not support it, the system will likely never be built.
- **Federal and State Legislation For Infrastructure Financing Tools.** In column 5 of Exhibit 5, there is a list of the credit instruments that could be used to lower the cost of funding the highway, rail and environmental measures needed for a logistics-based Southern California economic strategy. These include federal tax credit equity financing and state authorization of public/private infrastructure financing. To speed project processing and lower costs, state approval of design-build construction project processing is needed.
- **Private Sector Leadership.** Ultimately, the development of the wide-ranging political and economic agenda required to move the strategy forward will require the leadership of private sector individuals with a vision for Southern California's future. Their foresight and energy will be needed in encouraging federal, state, and local institutions and political leaders to make the decisions that can make a program of this importance a reality.
- **Environmental Cooperation.** To begin improving public health, the most cost-effective environmental improvement strategies need to be identified, prioritized, and funded promptly. Numerous local, state and federal environmental agencies have begun to realize the extraordinary challenges posed by the accelerating flow of international goods through Southern California and the lack of infrastructure, financing and environmental measures to handle it. They need to follow through on their expressed interest in cooperating on this issue. A memorandum of understanding that pledges cooperation and outlines how each can help bring an infrastructure and environmental strategy to fruition would be a helpful first step.
- **Establishment of Federal Infrastructure Financing Related to International Trade.** A crucial player in the long-term funding of the infrastructure and environmental projects needed for this Southern California economic strategy must be the federal government. Federal economic and trade policies are a major reason for the flood of goods now entering the U.S. Yet there is no federal financing structure tied to

the landside issues of the port, rail and truck infrastructure needed to handle the movement of this trade. Whether it is port-related container fees, the dedication of a portion of tariffs to the goods movement infrastructure or some other mechanism, the federal government needs to begin playing a significant role in infrastructure financing.

- **Political Leadership.** Southern California's state and federal delegations include several crucial committee chairpersons. They should be able to bring considerable influence to bear on acquiring financing, developing financial tools, and undertaking legislative initiatives that can move the strategy forward. Given the wide range of pressures on these officials, the region's private sector leaders and its agencies must ensure that its legislative delegations are aware of the issue, the emerging lines of strategies, and how they can use their influence to help craft solutions.

Summary

The goods movement issue presents Southern California with its greatest economic opportunity in decades to create upward economic mobility for its workforce. This report has outlined the challenges, explained the opportunities and underscored the potential benefits of a logistics-based economic and environmental strategy. It has also laid out a route to implementing such a strategy and ended by explaining the steps that now need to be taken to move ahead. In many respects, the future outlined by this research is ours to grasp or let slip away.

Dr. John Husing is the Vice President of Economics and Politics, Inc. This essay is a condensed version of a longer paper prepared by Dr. Husing for SCAG that could be accessed at http://scag.ca.gov/goodsmove/pdf/GoodsmovePaper0905.pdf.